Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
Service Rules for the 698-746, 747-762 and 777-792 MHz Bands	)	WT Docket No. 06-150
Revision of the Commission's Rules to Ensure Compatibility With Enhanced 911 Emergency Calling Systems	)	CC Docket No. 94-102
Section 68.4(a) of the Commission's Rules Governing Hearing-Aid Compatible Telephones	)	WT Docket No. 01-309

COMMENTS OF LEAP WIRELESS INTERNATIONAL, INC.

Leap Wireless International, Inc., on behalf of itself and its affiliated companies ("Leap") hereby offers the following Comments in connection with the above-captioned Notices of Proposed Rulemaking ("Notice").

I. INTRODUCTION

Leap has led the wireless industry in offering consumers unlimited mobile wireless services within a local service area for an affordable flat monthly rate and without a contract or a requirement that its customers meet a pre-determined credit standard. This innovative pricing structure brings the benefits of mobile wireless service to many consumers who might otherwise be unable to obtain it. Leap also draws customers who want more predictable bills or who want to avoid potentially

huge overage charges. Leap has been able to provide high-quality, low-cost mobile wireless service in large part because it (i) has deployed a high capacity, state-of-the-art CDMA network, (ii) has streamlined its back-office functions, and (iii) operates its network extremely efficiently.

As of June 30, 2006, Leap served over 1.8 million customers in 21 states.[1] Those numbers, however, do not reflect Leap's unique customer base. Within this population are many traditionally under-served customers: 69 percent of Leap's subscribers have household incomes of less than $35,000 per year, and 46 percent are Hispanic or African-American. The usage patterns of Leap's customers are also vastly different from those of other carriers: The average Leap customer uses 1,500 minutes per month (nearly an hour a day, every day), while the industry average is 600 minutes per month.[2] Indeed, a majority of Leap's customers have "cut the cord" and abandoned their landlines altogether: 93 percent use Leap as their primary phone service—far outpacing the industry average on both counts.[3]

Leap is keenly interested in maximizing new opportunities to acquire spectrum at auction and in the aftermarket. Leap was a significant participant in prior PCS auctions (Nos. 22, 35 and 58), and recently was named the high bidder on

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[1] Results of internal company research.

[2] Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services, WT Docket No. 05-71, *Tenth Report*, FCC 05-173, at ¶ 199 (Sept. 30, 2005) ("*Tenth Annual Report*").

[3] *Id.*; *see also id.*, at ¶ 196 & n.492 (citing surveys reporting that, for second half of 2004, approximately six percent of adults lived in households with only wireless phones; *id.*, at ¶ 197 (2004 survey showed that nine percent of all households receive almost all their calls wirelessly).

99 spectrum licenses in the recently closed Advanced Wireless Services ("AWS") auction (Auction No. 66). Leap anticipates that, like AWS, the Upper and Lower 700 MHz bands will be critical sources of additional spectrum to be used by Leap and other wireless carriers to provide innovative mobile voice and data services to U.S. consumers. As suggested in the *Notice*, however, certain additional changes to the Commission's rules are necessary to optimize the 700 MHz frequencies for such use. Leap discusses some of these below.

II. LEAP SUPPORTS REVISIONS TO THE UPPER AND LOWER 700 MHZ BAND PLANS

The impetus for change to the 700 MHz band plans stems initially from a petition of the Rural Cellular Association ("RCA"), which suggested that the Commission consider assigning 700 MHz Band licenses over smaller geographic service areas.[4] RCA has requested that additional Cellular Market Areas ("CMAs") be made available in both the un-auctioned portions of the Upper and Lower 700 MHz bands, arguing that the use of smaller license areas will accelerate the deployment of wireless broadband services to rural areas by permitting smaller entities that serve such areas to compete more effectively against larger wireless players for spectrum at auction.[5] As the *Notice* observes, various parties have supported the RCA Petition. The Rural Telecommunications Group ("RTG") has

[4]Rural Cellular Association, Petition to Institute Review and Modification of the Size of Spectrum Area Sizes for 700 MHz Spectrum, GN Docket No. 01-74, WT Docket No. 99-168 (filed July 29, 2005) ("RCA Petition").

[5] *See Notice* at ¶ 22.

proposed assigning an additional 22 MHz of 700 MHz band spectrum over CMAs to further facilitate the deployment of new technologies and services to rural areas, and US Cellular has proposed re-configuring the Upper 700 MHz Band to assign a 10 MHz paired block over Economic Areas in addition to CMAs.[6]

Having evaluated carefully the proposed 700 MHz band plan revisions, and informed by its previous experiences in bidding at auction against the nation's largest wireless carriers, Leap supports the direction of both the RCA and US Cellular proposals, but with further revision. Auction No. 66 for AWS-1 spectrum plainly demonstrated that the lion's share of spectrum carved into large geographic regions will quickly move beyond the reach and resources of small and mid-sized bidders. On the other hand, Leap is concerned that taking too granular an approach to geographic area licensing – for example, by adopting CMAs across the board for the balance of unauctioned 700 MHz spectrum – will increase transactions costs unduly and will not give enough deference to the fact that wireless carriers over the past three decades plainly have configured their networks based on larger clusters and footprints than is reflected by CMA licensing.

While all spectrum band plans involve tradeoffs and inherent predictive judgments, Leap believes that the public interest will be best served by the following modifications to the Upper and Lower 700 MHz band plans:

- **As US Cellular proposes, split the current Upper 700 MHz 20 MHz D Block into two 10 MHz blocks.**

[6] *Id.* ¶23.

Thus, the D Block license and a new E Block license would ensure uniform block sizes among Blocks C, D and E.

- **As RCA and RTG propose, adopt significantly smaller license service areas for the Upper 700 MHz band.**

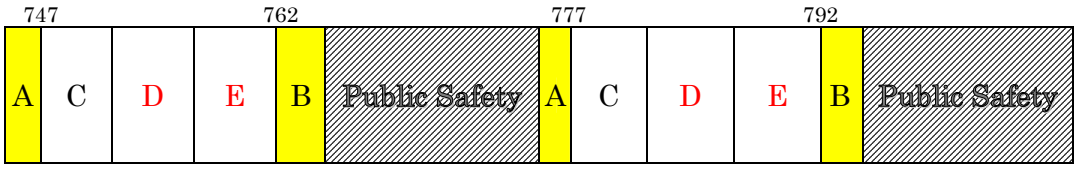
Here, however, the Commission should not adopt blanket CMA licensing. Instead, Leap believes that balance among bidders at auction will be best served by licensing these blocks uniformly on an Economic Area ("EA") basis. 176 EAs will ensure that larger carriers begin with area sizes that make sense as a starting point for aggregation, while smaller carriers will still be able to gain access and compete at auction on a much more meaningful basis than MEA or EAG licensing would allow.

- **Create a CMA in the Lower 700 MHz Band, as RCA, RTG and US Cellular propose, along with another EA license.**

As a safeguard for small and rural carriers, Leap would support the licensing of Lower 700 MHz Block B on a CMA basis. In addition, also to accommodate the concerns of smaller carriers, Leap proposes that Lower 700 MHz Block E be licensed on an EA basis.

With these revisions, Leap's overall proposal would be represented as follows:

LEAP'S PROPOSED REVISED UPPER 700 MHZ BAND PLAN



CH. 60	CH. 61	CH. 62	CH. 63	CH. 64	CH. 65	CH. 66	CH. 67	CH. 68	CH. 69

746 752 758 764 770 776 782 788 794 800 806

Block	Frequencies	Bandwidth	Pairing	Area Type	Licenses
A	746-747, 776-777	2 MHz	2 x 1 MHz	MEA	52*
	762-764, 792-794	4 MHz	2 x 2 MHz	MEA	52*
C	747-752, 777-782	10 MHz	2 x 5 MHz	EA	176
D	752-757, 782-787	10 MHz	2 x 5 MHz	EA	176
E	757-762, 787-792	10 MHz	2 x 5 MHz	EA	176

*Blocks have been auctioned.

LEAP'S PROPOSED REVISED LOWER 700 MHZ BAND PLAN

698 704 710 716 722 728 734 740

A	B	C	D	E	A	B	C
CH. 52	CH. 53	CH. 54	CH. 55	CH. 56	CH. 57	CH. 58	CH. 59

Block	Frequencies	Bandwidth	Pairing	Area Type	Licenses
A	698-704, 728-734	12 MHz	2 x 6 MHz	EA	176
B	704-710, 734-740	12 MHz	2 x 6 MHz	CMA	734
C	710-716, 740-746	12 MHz	2 x 6 MHz	MSA/RSA	734*
D	716-722	6 MHz	unpaired	700 MHz EAG	6*
E	722-728	6 MHz	unpaired	EA	176

*Blocks have been auctioned.

III. THE COMMISSION SHOULD ALSO REVISE ITS UPPER 700 MHZ POWER AND OUT-OF-BAND EMISSION LIMITS

Under current rules, the power limit for base stations operating in Blocks C and D the Upper 700 MHz Band is 1 kW ERP. Leap strongly urges that this power

limit be raised to 2 kW to facilitate the deployment of robust CMRS services.

The 1 kW power limit appears to have been imposed initially in the Upper 700 MHz Band based on concerns over RF exposure, at a time when it was less clear how the spectrum would be used.[7] It is now more apparent that the Upper 700 MHz band will be prime spectrum for mobile voice and broadband use, functionally similar to PCS spectrum today. In this respect, PCS is the proper reference in determining what power limits should be adopted in the Upper 700 MHz Band. In fact, 2 kW is the maximum ERP that has been established for many years in the 800 MHz cellular and 1900 MHz PCS spectrum bands, and has proven to be safe over decades of wireless operation.

Furthermore, Leap is confident that it can meet a PFD limit of 3 mW/m^2 at ground level in the Upper 700 MHz Band when operating within a 2 kW ERP limit. A PFD of 3 mW/m^2 is the limit that the Commission has determined will provide protection in the Lower 700 MHz Band to Public Safety users. The Commission concluded that this would be the PFD generated by a half wave dipole operating at 1 kW ERP, 75 meters above the ground. The Lower 700 MHz Band power limit of 50 kW was determined by concluding that high power base stations would have antennas high above the ground that were able to "greatly attenuate the station's signal near the antenna."[8] For the Upper 700 MHz Band, the Commission determined that a maximum ERP of 1 kW would be required to meet this limit,

[7] *See Upper 700 MHz Order* at ¶ 108.

[8] *Notice* at ¶ 91, n.216.

although no PFD limit at ground level was explicitly imposed.

In this regard, Leap notes that the antennas used in cellular base stations have vertical radiation patterns that greatly attenuate the power directed towards the ground. To illustrate the point, Leap has performed an analysis using the vertical radiation patterns of typical cellular-style antennas at 800 MHz to calculate the PFD at ground level with a maximum ERP of 2 kW. The analysis assumes no clutter loss and thus is a worst case calculation. Using a typical example of (i) a 17 dB gain, 65 degree beam width antenna with 2 degrees of electrical down tilt, and (ii) an antenna height of 20 meters, the maximum PFD at ground level is 1.37 mW/m^2. When the antenna is 15 meters above ground the maximum PFD at ground level is 2.44 mW/m^2. Antenna heights of 15 to 20 meters are typical of urban base station sites, and the typical antenna heights are substantially higher in suburban and rural locations. Thus, Leap is confident that it and other carriers can control the PFD to the same levels as required in the Lower 700 MHz Band – $3mW/m^2$ – with a maximum ERP limit of 2 kW. Indeed, Leap would not object to the 3 mW/m^2 limit being imposed in the Upper 700 MHz Band with a maximum ERP limit of 2 kW.

Finally, with respect to Out Of Band Emissions (OOBE), the Commission has imposed limits in the Upper 700 MHz Band of 76 + 10 log P for base station OOBE (P is the output power of the Base Station, not the ERP) in an effort to protect public safety users. Significantly, the Commission acknowledged in setting this limit that a lower threshold "might well protect the public safety licensees," but

nonetheless chose to adopt the more conservative OOBE limit.[9]

The OOBE base station limit should be revised. It will impose added cost to 700 MHz base station equipment, and will affect the capacity of the fielded network. Instead, Leap believes that that the Commission should adopt a revised OOBE limit of 53 + 10 log P. Such a limit is 10 dB more conservative than the 43 + 10 log P limit that has been imposed in other wireless services to ensure similar protection,[10] and will provide fair and reasonable protection to public safety users.

IV. THE COMMISSION SHOULD NOT ALTER ITS "SUBSTANTIAL SERVICE" PERFORMANCE REQUIREMENTS

700 MHz band services currently are subject to a performance requirement of "substantial service" at the end of the license term.[11] Leap sees no reason to alter this performance requirement, or to change the existing safe harbors that provide examples of what would be considered "substantial service" in the offering of 700 MHz services.[12]

The Commission has now implemented the "substantial service" requirement across a number of wireless services.[13] In so doing, the Commission has recognized

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[9] *Id.*, ¶ 105.

[10] *See id.; see, e.g.*, 47 C.F.R. §24.238(a).

[11] *See* 47 C.F.R. § 27.14(a); *Notice* at ¶ 16.

[12] For mobile services, the safe harbor would be met if a licensee can demonstrate coverage for 20 percent of the population of its licenses service area at the license-renewal mark. *Notice* at ¶ 16 (*citing Upper 700 MHz Order* at ¶ 70, *Lower 700 MHz Order* at ¶ 151).

[13] *See, e.g., Rural NPRM,* 18 FCC Rcd 20802, 20819 ¶ 34 ("In more recently adopted rules for wireless services, such as our Part 27 rules for private services, Lower and Upper 700 MHz, 39 GHz, and 24 GHz, the Commission established the substantial service standard as the only construction requirement."). *See also* Coalition Proposal at 44. ("There is ample

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that "construction benchmarks focusing solely on population served or geography covered may not necessarily reflect the most important underlying goal of ensuring public access to quality, widespread service."[14] Indeed, the Commission has determined that a substantial service standard (i) better enables the Commission to take into demonstrations of adequate deployment in rural areas, to niche markets, or to discrete populations or regions with special needs, and (ii) encourages licensees to provide the best possible service and avoid construction merely to meet regulatory requirements rather than market conditions.[15]

The Commission recently reiterated its view that "a market-oriented approach to spectrum policy that utilizes a substantial service standard to meet build out requirements best ensures actual deployment of wireless facilities and broader provision of wireless services."[16] There is no evidence that this statement is not and will not remain true with respect to the deployment of services in the 700 MHz bands.

V. THE EXTENSION OF 911/E911 AND HEARING AID COMPATIBILITY

(...continued)

precedent for [a substantial service] approach as the Commission has adopted this very same requirement for operation at 2.3 GHz, the Upper 700 MHz band, the Lower 700 MHz band, the paired 1392-1395 MHz and 1432-1435 MHz bands or the unpaired 1390-1392 MHz, 1670-1675 MHz and 2385-2390 MHz bands.").

[14] In the Matter of Amendment of Parts 1, 21, 73, 74 and 101 of the Commission's Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands, *Order on Reconsideration and Fifth Memorandum Opinion and Order and Third Memorandum Opinion and Order and Second Report and Order,* 21 FCC Rcd 5606 (2006), ¶ 276.

[15] *Id.*, ¶ 277.

[16] *Id.*, ¶ 278; *see Rural Order*, 19 FCC Rcd 19078, 19122 ¶¶ 77-78 (2004).

REQUIREMENTS IS APPROPRIATE FOR LICENSEES OFFERING COMMERCIAL MOBILE RADIO SERVICES IN THE 700 MHZ BANDS

The *Notice* tentatively concludes that 700 MHz services that meet the criteria set forth in the E911 Scope Order should be subject to 911/E911 and hearing aid compatibility rules. Leap supports the application of these important public interest requirements to functionally identical services, regardless of the spectrum bands utilized. It is logical, equitable and indeed, vitally important to consumers that all CMRS services – whether operating in spectrum allocated for PCS, AWS, 700 MHz or some other service – be made subject to the same emergency access and compatibility requirements.

VI. CONCLUSION

Leap urges that the Commission's rules be amended as set forth above.

Respectfully submitted,

/s/

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